GUSAKOVSKIY, Zakhariy Pavlovich; OCHKIN, Vasiliy Alekseyevich;
      ADAMOVSKIY, I.T., retsenzent; UR'YASH, F.G., retsenzent;
      BELOUSOV, D.P., spets. red.; KORBUT, L.V., red.

[Technology of canned meat] Tekhnologiia miasnykh kon-
servov. Moskva, Pishchevaia promyshlennost', 1964. 293 p.
                                          (MIRA 17:10)

GUSALOV, A.Kh.

Winter camps for students. Zdorov'e 3 no.1:11 Ja '57. (MIRA 10:2)

1. Starshiy prepodavatel' Moskovskogo neftyanogo instituta imeni Gubkina.
        (CAMPING)

GUSALOV, A.Kh.

How does one fight fatigue? Zdorov'e 5 no.2:30 F '59.
(MIRA 12:2)

(Fatigue)

GUSALOV, Kh.P.; KHACHETLOV, R.M.

Mechanized saturation irrigation along long strips. Gidr. i mel.
17 no.2:4-8 F '65.   (MIRA 18:5)

1. Kabardino-Balkarskaya sel'skokhozyaystvennaya opytnaya stantsiya.

CHIBIROV, Khristofor Tadeozovich; GUSALOV, Nikolay Aleksandrovich; DZUSKAYEV,
K.B., red.; DATRIYEVA, Ye.N., tekhn. red.

[Northern Ossetia in the seven-year plan] Severnaia Osetiia v semi-
letke. Ordzhonikidze, Severo-Osetinskoe knizhnoe izd-vo, 1960. 36 p.
(MIRA 14:12)
(Ossetia—Economic conditions)

GUSALOV, Z.G., gornyy inzh.; KONOVALOV, N.N., gornyy inzh.; YEGIN, B.,
gornyy inzh.

Operations at the Almalyk open-pit mine. Ugol' 40 no.12:38-40
D '65.   (MIRA 18:12)

GUSAMI, G. M. Cand Med Sci — (diss) "Bandaging external iliac

viens during compensated mitral vitium cordis,"Moscow, 1960, 19 pp,

250 cop. (First Moscow Medical Institute im I. M. Sechenov) (KL, 42-60, 116)

GUSAMI, G.M.

Change in venous pressure and circulation time after ligation of
the external iliac veins in decompensating mitral defects of the
heart. Khirurgiia 36 no.3:41-46 Mr '60.   (MIRA 13:12)
    (MITRAL VALVE--SURGERY)   (BLOOD PRESSURE)
    (BLOOD--CIRCULATION)   (ILIAC VEIN--LIGATURE)

5(3)

AUTHORS: Gostunskaya, I. V., Gusar, N. I.,   SOV/20-123-5-23/50
Leonova, A. I., Kazanskiy, B. A., Academician

TITLE: The Reduction of Diene Hydrocarbons With a Conjugate System
of Double Bonds by Hydrogen at the "Instant of Its Liberation"
(Vosstanovleniya diyenovykh uglevodorodov s sopryazhennoy
sistemoy dvoynykh svyazey vodorodom " v moment vydeleniya")

ABSTRACT: Hydrogen at the instant of its liberation is capable of
attaching itself to the diene hydrocarbons, not only in the
1.4-position, but also in the 1.2-and 3.4-positions (Refs
1-6). The sequence of the attachment depends on the structure
of the diene. The attachment in the 1.2-and 3.4-positions is
favored by the larger number of alkyl groups in the 1st and
4th terminal carbon atoms (di-isocrotyl and 2-methyl-hexadiene-
2.4): the alkyl groups at the 2nd and 3rd atoms of the
conjugate system have the same effect with regard to the
1.4-position (isoprene and di-isopropenyl). By the reduction
with sodium solution in liquid ammonia (Refs 1-4) or with
calcium-hexa-ammoniate (Refs 5-6), metal amides are formed

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The Reduction of Dienu Hydrocarbons With a Conjugate   SOV/20-123-5-23/50
System of Double Bonds by Hydrogen at the 'Instant of Its Liberation"

Card 2/3

simultaneously with the hydrogen attachment to the double
bond. It has recently become clear that the amides are
capable of catalysing the displacement of the double bonds
in mono-and diolefin hydrocarbons (Refs 7-10). Consequently,
it could be expected that under certain conditions the
structure of mono-olefins resulting from the attachment of
a hydrogen molecule to the dienes should depend, not only
on the structure of the initial diene, but also on the
secondary reaction of the isomerization under the influence
of the resulting metal amide. In order to eliminate the
isomerizing effect of the metal amide, ethyl alcohol was
added to the sodium solution in liquid ammonia (Ref 11).
Besides, di-isopropenyl was reduced by calcium-hexa-ammoniate,
and di-isocrotyl was reduced by sodium in liquid ammonia (Ref 2).
The results are shown in table 1. From this it can be seen that
on the reduction from all its sources at the moment of its
liberation, hydrogen is attached almost exclusively in the
1.4-position of di-isopropenyl. The reduction of di-isocrotyl
is less selective, although hydrogen is attached here in the
1.2-positions. From a comparison of the data for calcium-hexa-

The Reduction of Diene Hydrocarbons With a Conjugate   SOV/20-123-5-23/50
System of Double Bonds by Hydrogen at the Instant of Its Liberation'

ammoniate as well as for sodium solution in liquid ammonia
with those for the latter solution to which, however, ethanole
has been added, it can be seen that although the secondary
isomerization reaction somewhat modifies the results of the
primary reaction, it does not distort them. Thus the rules
governing the effect of the structure of dienes on the
direction of their reduction, as specified in the papers by
Levina, Kazanskiy, and collaborators, remain valid. There
are 2 figures, 7 tables, and 16 references, 15 of which
are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 5, 1958

Card 3/3

VILENSKIY, Yu.B.; VERETENOVA, T.N.; LEVI, S.M.; GUSAR', N.I.; DUSHEYKO, D.A.

Investigating the hardening properties of α,β-dichloro- and α,β-dibromoformylacrylic acids. Zhur.nauch.i prikl.fot. i kin. 6 no.5:334-337 S-O '61. (MIRA 14:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut (NIKFI).

(Photographic emulsions)

L 51812-65   EWT(m)/EPF(c)/EPR/EWP(j)/T/   Pc-4/Pr-4/Ps-4   WW/RM

ACCESSION NR: AP5017011   UR/0204/64/004/006/0819/0823

AUTHOR: Plate, A. F.;Gusev', N. I.; Belikova, N. A.; Sterin, Kh. Ye.

TITLE: Hydrogenolysis and pyrolysis of bicyclo-(3,2,0)-heptane

SOURCE: Neftekhimiya, v. 4, no. 6, 1964, 819-823

TOPIC TAGS: heptane, hydrogenation, pyrolysis, catalysis, cyclic group

ABSTRACT: Hydrogenolysis of bicyclo-(3,2,0)-heptane on platinized char-
coal begins at 100° and goes almost to completion at 150°, forming
ethylcyclopentane (49%), cycloheptane (44%), and trans-1,2-dimethyl-
cyclopentane (7%). In the presence of nickel-on-kieselguhr, complete
hydrogenolysis of bicyclo-(3,2,0)-heptane takes place at 110°, resulting
in the formation of ethylcyclopentane (50%), cyclopentane (20%), and
trans-1,2-dimethyl-cyclopentane (28%). The carrier, kieselguhr, does not
catalyze the conversion of bicyclo-(3,2,0)-heptane. Formation of the
trans-isomer of 1,2-dimethylcyclopentane was explained by conversion of
the cis-isomer originally formed, at the reaction temperature. In a study
of the behavior of bicyclo-(3,2,0)-heptane under conditions of catalytic
isomerization on platinized charcoal (in the absence of hydrogen), the
hydrocarbon remained stable up to 250°, and cleavage of the cyclobutane

Card 1/2

L 51812-65

ACCESSION NR: AP5017011

ring occurred to an extent of only 14% at 350°. In the absence of a catalyst, pyrolysis does not begin at temperatures below 450°; at 500°, bicyclo-(3,2,0)-heptane is 15% decomposed, while at 550° the decomposition goes to completion. The pyrolysis products at 500°, after hydrogenation, contained the initial hydrocarbon, 6-7% cyclopentane, and 7-8% n-heptane. The pyrolyzate obtained at 550° represented a complex mixture: after hydrogenation, n-pentane, isopentane, cyclopentane, n-heptane, trans-1,2-dimethylcycloheptane, ethylcyclopentane, a few aromatic compounds, and the initial bicyclo-(3,2,0)-heptane were found; the gas formed in the decomposition contained 80% ethylene and an admixture of methane and hydrogen.   Orig. art. has: 2 formulas, 3 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University); Komissiya po spektroskopii AN SSSR (Spectroscopy Commission, AN SSSR)

SUBMITTED: 12Jun64   ENCL: 00   SUB CODE: OC, OC

NO REF SOV: 006   OTHER: 002   JPRS

Card 2/2

PLATE, ..F.; KOL...'VA, N.A.; BORYSEVA, ..A.; TELEN', N.I.; VODE, ..V.

Isomerization of bicyclic C_9H_{16} hydrocarbons in the presence of $AlCl_3$. Dokl. AN SC R 163 no.4:901-905 Ag '65.

(MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet i Institut elementoorgani-cheskikh soyedineniy AN SSSR. Submitted January 16, 1965.

HRENNIKOV, A.I.

Reduction of oxides by sodium in liquid ammonia. Part.
Zhur. ob. khim. 35 no.1: between 170.

Reduction of oxides by sodium in liquid ammonia. Part. 2.
Ibid.:129-131   (MIRA 18:3)

FEL'DMAN, A.L.; GUSAR, Z.D.; KATSEVICH, A.I.

Preparation of canned plums from the Early Siniukha variety.
Kons. i ov.prom. 18 no.9:8-9 S '63.   (MIRA 16:9)

1. Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy
promyshlennosti.
                              (Fruit, Canned)

VORONITSYN, K.I., kand. tekhn. nauk, red.; TIZENGAUZEN, P.E., kand.
tekhn. nauk, red.; NADBAKH, M.P., red.; TANTSEV, A.A., starshiy
nauchnyy sotr., red.; ABRAMOV, S.A., kand. tekhn. nauk, red.;
ABRAMOV, D.A., red.; BOGDANOV, N.I., starshiy nauchnyy sotr.,
red.; VINOGOROV, G.K., kand. tekhn. nauk, red.; GAVRILOV, I.I.,
starshiy nauchnyy sotr., red.; GUSARCHUK, D.M., starshiy nauchnyy
sotr., red.; D'YAKONOV, A.I., red.; ZAV'YALOV, M.A., kand. tekhn.
nauk, red.; ZARETSKIY, M.S., starshiy nauchnyy sotr., red.;
KACHELKIN, L.I., starshiy nauchnyy sotr., red.; KISHINSKIY, M.I.,
kand. tekhn. nauk, red.; KOLTUNOV, B.Ya., starshiy nauchnyy sotr.,
red.; OSIPOV, A.I., kand. tekhn. nauk, red.; SHIMEV, I.S., kand.
ekon. nauk, red.

[Materials of the enlarged session of the Scientific Council of
the Central Scientific Research Institute for Mechanization and
Power Engineering in Lumbering on problems concerning power
engineering and the electrification of the lumber industry]
Materialy rasshirennoi sessii Uchenogo soveta TsNIIME po voprosu
energetiki i elektrifikatsii lesnoi promyshlennosti. Moskva,
1961. 75 p.   (MIRA 15:4)
                              (Continued on next card)

VORONITSYN, K.I.——(continued) Card 2.

1.Khimki.TSentral'nyy nauchno-issledovatel'skiy institut me-
khanizatsii i energetiki lesnoy promyshlennosti. 2. Nachal'nik
TSentral'nogo byuro tekhnicheskoy informatsii lesnoy promyshlen-
nosti (for Nadbakh). 3. Direktor TSentral'nogo nauchno-
issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy
promyshlennosti (for Voronitsyn). 4. Uchenyy sovet TSentral'nogo
nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki
lesnoy promyshlennosti (for D'yakonov). 5. Nachal'nik otdeleniya
energetiki i sredstv avtomatizatsii TSentral'nogo nauchno-
issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy
promyshlennosti (for Zaretskiy).
                    (Lumbering)   (Electric power)

KACHELKIN, Leonid Ivanovich; GUSARCHUK, D.M., red.; KSENOFONTOV, I.A., red.; YASINSKIY, B.N., red.; MYAKUSHKO, V.P., red.izd-va; SHIBKOVA, R.Ye., tekhn.red.

[Complete utilization of wood waste] Kompleksnoe ispol'zovanie otkhodov drevesiny. Moskva, Goslesbumizdat, 1961. 201 p.
(MIRA 15:5)

1. Moscow. Vystavka dostizheniy narodnogo khozyaystva SSSR.
2. TSentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti (for Kachelkin).
(Wood-using industries)
(Wood waster)

VASIL'YEV, Boris Aleksandrovich; KOMAROV, Yuriy Semenovich; PAVLOV, Boris Ivanovich; GUSARCHUK, D.M., red.; PITERMAN, Ye.L., red.izd-va; KARLOVA, G.L., tekhn.red.

[Automation of production processes in the lumbering industry] Avtomatizatsiia proizvodstvennykh protsessov v lesnoi promyshlennosti. Moskva, Goslesbumizdat, 1963. 184 p.
(MIRA 16:10)

(Lumbering--Machinery) (Automatic control)

IVANOV, Georgiy Petrovich; GUSARCHUK, D.M., red.; MYAKUSHKO,
    V.P., red.izd-va; SHIBAKOVA, P.Ye., tekhn. red.

[Recent developments in the technology of the Antropovo
Logging Camp; practices in the biological drying of the
wood of hardwood species] Novoe v tekhnologii Antropov-
skogo lespromkhoza; iz opyta biologicheskoi sushki dreve-
siny listvennykh porod. Moskva, Goslesbumizdat, 1962. 34 p.
                                        (MIRA 17:4)

GUSARENKO, A.N.; MATVEYEV, V.M.,kand.tekhn.nauk

Welding of connections during the installation of pipes on ships.
(MIRA 13:10)
Sudostroenie 26 no.9:60-62 S'60.
(Marine pipe fitting) (Welding)

SERGEYEVICH, V.I.; ZHUZE, T.P.; ZAKS, S.L.; BURMISTROVA, V.F.;
     GUSAREV, A.V.

Regularities in the flooding of oil from reservoir rocks with
compressed gases in a model reservoir. Neft. khoz. 41 no.2:29-35
F '63.   (MIRA 17:8)

GUSAREV, B.I. (g. Sumy)

Studying the topic "Machines operating on three-phase alternating current." Politekh.obuch. no.12:45-48 D '58. (MIRA 11:12)
(Electric machinery--Polyphase--Study and teaching)

GUSAREVA, E.V.

Innervation of the myocardium following its stimulated regeneration.
Dokl. AN SSSR 164 no.5:1190-1193 O '65.   (MIRA 18:10)

1. Instltut morfologii zhivotnykh im. A.N.Severtsova AN SSSR.
Submitted December 21, 1964.

GNILORYBOV, T.Ye.,zasluzhennyy deyatel' nauki USSR, professor; GUSAREV, V.F.,

Dermoplasty in trophic ulcers [with summary in English, p.160]
Vest.khir. 77 no.6:99-103 Je '56.   (MLRA 9:8)

1. Iz gospital'noy khirurgicheskoy kliniki (zav. - prof. T.Ye.
Gnilorybov) Dnepropetrovskogo meditsinskogo instituta. Dnepro-
petrovsk, pr. K.Marksa, d.2-a, kv. 59.
        (ULCER, surgery,
            skin transpl. (Rus))
        (SKIN TRANSPLANTATION, in various diseases,
            ulcer (Rus))

GUSAREV, V.F.

Foreign body of the bladder and urethra. Nov.khir.arkh. no.2:79
Mr-Ap '57. (MIRA 10:8)

1. Kafedra fakul'tetskoy khirurgii Dnepropetrovskogo meditsinskogo
instituta
(BLADDER--FOREIGN BODIES) (URETHRA--FOREIGN BODIES)

GUSAREV, V F

GUSAREV, V.F.

Primary skin grafting in loss of skin from the fingers and hand.
Ortop.travm. i protez. 18 no.3:67 My-Je '57.   (MIRA 10:9)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof M.F.
Kamayev) Dnepropetrovskogo meditsinskogo instituta (dir. - prof.
D.P.Chukhriyenko)
            (SKIN GRAFTING)   (HAND--WOUNDS AND INJURIES)

USSR/General Problems of Pathology. Transplantation of   U-2
          Tissues and Tissue Therapy.

Abs Jour   : Ref Zhur - Biol., No 20, 1958, No 93808

Author   : Gusarev, V. F.
Inst   : Dnepropetrovsk Medical Institute
Title   : Variation in the Temperature of the Skin and the Vascular
             Tone in Transplanted Skin Flaps at the Site of Trophic Ulcers.

Orig Pub   : Sb. nauchn. tr. Dnepropetr. med. in-ta, 1957, 3, 86-87.

Abstract   : The temperature of grafted skin flaps (f) was surveyed in
             35 patients after plastic surgery by the Filatov method and
             the Italian or bridge method. In the first 6 months the tem-
             perature of the skin F increased by 0.5 - o.5 degrees from
             the periphery to the center. The temperature of the skin
             surrounding F was 1-2 degrees below the temperature of the
             periphery of F. In the course of 1 year a rise of 1 degree

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5

USSR/General Problems of Pathology. Transplantation of   U-2
          Tissues and Tissue Therapy.

Abs Jour   : Ref Zhur - Biol, No 20, 1958, No 93808

            was noted in the temperature of F; furthermore, the tempe-
            rature could be explained by paralytic conditions of the blood
            vessels as a result of their denervation. In cases of im-
            pairment of the trophical system this elevation was observed
            for as long as 20 years. -- K. F. Markuze.

          Card 2/2

GUSAREV, V.F. (Dnepropetrovsk, ul. Dzerzhinskogo, d.10, kv.3.); TROFIMOV, V.L.

Treatment of intestinal obstruction in atresia of newborn infants.
Vest.khir. 80 no.1:124-126 Ja '58.   (MIRA 11:4)

1. Iz gospital'noy khirurgicheskoy kliniki (zav. - prof. T.Ye.
Gnilorybov) lechebnogo fakul'teta i fakul'tetskoy khirurgicheskoy
kliniki (zav. - prof. M.F.Kamayev) pediatricheskogo i sanitarno-
gigiyenicheskogo fakul'tetov Dnepropetrovskogo meditsinskogo
instituta.
            (INTESTINES, abnorm.
                atresia in newborn causing intestinal obstruct., surg.
                (Rus))
            (INTESTINAL OBSTRUCTION, etiol. & pathogen.
                atresia of intestine in newborn, surg. (Rus))
            (INFANT, NEWBORN, dis.
                intestinal obstruct. in atresia, surg. (Rus))

GUSAREV, V. E., Cand. Medic. Sci. "Direct and Long-range Results of Plastic Operations for Trophic Ulcers by Attached Skin Flap. (Clinal-experimental Investigation)," Minsk, 1961, 15 pp. (Minsk Med. Inst.) 120 copies (KL Supp 12-61, 284).

GUSAREV, V.F., assistent (Zaporozh'ye, ul. Krasnogvardeyskaya, d.38, kv.16); LOMAKIN, M.M.; KASHCHENKO, V.G.

Comparative evaluation of different types of endotracheal potentialized anesthesia. Klin.khir. no.9:49-52 S '62.   (MIRA 16:5)

1. Khirurgicheskoye otdeleniye (zav. - Ye.N. Knysh) Klinicheskoy bol'nitsy No.3 g. Zaporozh'ya.
                (INTRATRACHEAL ANESTHESIA)

GUSAKOV, V.I., MISHCHEN, A.I.

Used in the methodology of suturing the duodenal stump in re-section of the stomach. Khirurgiia no.9:53-6 S '64.
(MIRA 18:2)

1. 2-ya kafedra khirurgii (zav. - prof. R.F. Kaplan) Za-porozhskogo instituta usovershenstvovaniya vrachey.

GNILORYBOV, T.Ye., zasluzhennyy deyatel' nauki UkrSSR, prof. (Minsk, Mogilevskoye shosse, d.1-b, kv.20); GUSAREV, V.F., kand. med. nauk

Methods of skin grafting in contractures and cicatrices following burns. Ortop., travm. i protez. 26 no.1:45-47 Ja '65.

(MIRA 18:5)

GUSAREVA, E.V.

Regeneration of nerve elements of the left ventricle after its
injury by diathermocoagulation. Dokl. AN SSSR 157 no.3:733-736
Jl '64.   (MIRA 17:7)

1. Institut morfologii zhivotnykh imeni A.N. Severtova.
Predstavleno akademikom A.N. Bakulevym.

ARONOV, A. A.

"Investigation of the non-stationary passage through the critical speed of a flexible rotor with two non-equilibrated masses." Acad Sci USSR. Inst of Machine Science. Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya letopis', No. 16, 1956

Gusarov, A.A.

18(7); 25(2) P.5   PHASE I BOOK EXPLOITATION   SOV/2561

Akademiya nauk SSSR.   Institut mashinovedeniya

Problemy prochnosti v mashinostroyenii, vyp. 1 (Problems of
    Strength in Machinery Construction, Nr. 1) Moscow, Izd-vo
    AN SSSR, 1958. 105 p. 3,000 copies printed.

Resp. Ed.: S.V. Serensen, Academician, Academy of Sciences,
    UkrSSR; Ed. of Publishing House: V.I. Mitin; Tech. Ed.:
    O.M. Gus'kova.

PURPOSE: This collection of articles is intended for scientific
    research workers and engineers concerned with problems of
    vibrations in revolving shafts.

COVERAGE: This collection of articles deals with vibrations in
    rotary motion. Topics discussed include the influence of
    internal friction on the vibrational stability of revolving
    shafts, nonlinear vibration of shafts beyond critical speeds,
    flexural unsteady-state vibrations of a flexible rotor with

Card 1/4

Problems of Strength in Machinery (Cont.)   SOV/2561

two equal unbalanced masses, and flexural unsteady-state
vibrations of flexibly supported rotors, taking the gy-
roscopic effect into account. No personalities are
mentioned. References follow several of the articles.

TABLE OF CONTENTS:

    The author discusses the effect of internal friction
    and similar forces (e.g., friction between hub and
    shaft) on the stability of rotating shafts subjected
    to very small disturbances. An experimental inves-
    tigation of stability is described, and the results
    are analyzed.

    The purpose of the investigation presented in this
    article is to obtain general patterns for the effect

Card 2/4

Problems of Strength in Machinery (Cont.)   SOV/2561

of internal friction in rotating shafts at speeds of
rotation above the critical. The author analyzes the
rotation of a single-disk weightless shaft vibrating
at a frequency low enough to exclude the possibility
of deviation of the disk.

Gusarov, A.A. Flexural Unsteady-state Vibrations of a   54
Flexible Rotor With Two Equal Unbalanced Masses
      The author uses a previously obtained solution for
the analysis of the transition through critical speeds
of a shaft with two disks of equal weight, placed
equidistant from the supports, and having differently
located disbalance vectors. Two cases are discussed;
1) when the eccentricities of the disks are equal,
and 2) when they are unequal. The use of the results
for the dynamic balancing of flexible rotors with two
equal masses is explained.

Card 3/4

Problems of Strength in Machinery (Cont.)   SOV/2561

Grobov, V.A.   Unsteady-state Flexural Vibrations of
Elastically Supported Rotors, Taking the Gyroscopic Effect
Into Account   88
    This article is an investigation of the relationship
    between gyroscopic effect and unsteady-state trans-
    verse vibrations of rotors with flexible shafts on
    elastic bearings during transition through critical
    speeds. Two cases are treated, one in which the
    elastic supports have a linear characteristic with
    equal or different radial rigidity, and one in which
    one support is rigid, the other is elastic with a
    nonlinear characteristic, and the coefficients of
    radial rigidity are the same.

AVAILABLE: Library of Congress

Card 4/4   GO/mg
                                                   11-30-59

GUSAROV, A.A., kand. tekhn. nauk; DIMENTBERG, F.M., doktor tekhn. nauk.

Balancing flexible shafts. Vest. mash. 39 no.1:47-53 Ja '58.
(MIRA 12:1)

(Balancing of machinery)

25(2); 24(6)

Akademiya nauk SSSR. Institut mashinovedeniya

Kolebaniya v turbomashinakh; sbornik statey (Vibrations in Turbomachines; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 117 p. Errata slip inserted. 2,300 copies printed.

Resp. Ed.: S. V. Serensen; Academician, Academy of Sciences, USSR; Ed. of Publishing House: Ts. A. Elterchikatiy; Tech. Ed.: V. T. Volkov.

PURPOSE: This collection of articles is intended for scientific research workers, engineers, and designers in the field of turbomachinery.

COVERAGE: This collection of articles deals with vibrations in turbomachinery. The following topics are discussed: vibrations and stability of beams, flexural vibration of a rotating shaft, whirling speeds of a turbine rotor with two unbalanced masses, acceleration through resonance of a nonlinear system, whirling speed and clearance in bearings, dynamic stresses in blades of an axial compressor, and damping of vibrations. No references are mentioned. References follow several of the articles.

Deyrenko, M.L.; Ikh Disenberg, A.S. El'berman, G.L. Lyudin, M.I.; Feigenbaum, G.I. Investigation of Vibrations and Stresses in the Rotor and Bearings of a High-power Turbogenerator During Operation   5

The authors discuss an experimental investigation made on a high-power turbogenerator in order to analyze the real state of stress of the rotor and vibrations of fixed rotors and bearings. The dynamic behavior of the whole cycle of the rotor and bearing is treated. The influence of bases and foundations are not taken into consideration.

Bolotin, V.V.   Vibration and Stability of Beams Under Action of Nonconservative Forces   23

A cantilever rectilinear beam loaded by uniformly distributed following forces acting in the plane of its maximum rigidity is analyzed for stability at planar deformation. Critical parameters of the loading with and without consideration of damping are established.

Dimentberg, F.M.   Acceleration Through Critical Speeds of a Flexible Rotor with Two Unbalanced Masses in the Presence of Friction   51

The author derives a system of two complex differential equations as a solution to the problem. The solution is based on the following assumptions: that the mass of the rotor and the shaft, and the initial deflections of the shaft are negligible, but the shaft supports are absolutely rigid; that the shaft itself is torsionally rigid; and that the acceleration through critical speed is uniform.

Kubnaik, V.P.   Acceleration Through Resonance in One Case of a Nonlinear System   75

Analysis is made of a nonlinear vibrating system with one degree of freedom having a nonlinear restoring force and excited by a low-frequency disk-shaped disturbing force. The effect of the rate of acceleration on amplitudes of the motion is discussed.

Rataush, V.Yu. (Deceased).   Critical Speeds of a Rotor and Clearances in Bearings   81

The effect of the clearance in rolling contact bearings on the motion and whirling speed of a rotor is discussed. Rotors having no critical speed are described together with an experimental checking installation for selecting eccentricities of disks.

Rubanov, Ye.I.   Investigation of Dynamic Stresses in Blades of an Axial Compressor WITH a Wide Control Range   104

The effect of an experimental investigation of dynamic stresses in the basic results of an axial compressor by means of wire resistance transducers placed in the root sections are presented. The behavior of the blade at various speeds, including resonance, is described.

Sergeyev, S.I.   Damping of Vibrations of Anisotropoelastic Rotors   114

Conditions for successful damping of a rotor with unequal elasticity coefficients along its principal axis are discussed. The inertia and

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(BUSAROV, A.A.)

SOV/3416

Akademiya nauk SSSR. Institut mashinovedeniya

Voprosy prochnosti materialov i konstruktsiy (Problems of Strength of Materials and Structures) Moscow, 1959. 399 p. Errata slip inserted. 3,000 copies printed.

Resp. Ed.: B. E. Reshetov, Professor, Doctor of Technical Sciences; Ed. of Publishing House: G. B. Gornukov; Tech. Ed.: S. G. Gulid.

PURPOSE: This book is intended for engineers and scientists concerned with the problems of the strength of materials and construction.

COVERAGE: The book contains 29 articles on the strength of materials in general, and of machine construction in particular. This collection was prepared under the direction of the Institute of Mechanical Engineering of the AS USSR in honor of Sergey Vladimirovich Serensen, one of the founders and directors of the national school of scientific strength of materials, who recently completed 30 years of scientific activity. To produce Gives a short sketch of his life and professional activities. The collection is divided into two parts. The first part contains 14 articles on general problems of strength and the strength of machine construction materials. The second part contains 15 articles on dynamics and calculation of strength and rigidity. There are references at the end of each article.

PART II. DYNAMICS AND CALCULATION OF STRENGTH AND RIGIDITY

AVAILABLE: Library of Congress

Card 6/6

AC/ec
5-27-60

PHASE I BOOK EXPLOITATION   SOV/4415

Akademiya nauk SSSR.   Institut mashinovedeniya

Problemy prochnosti v mashinostroyenii, vyp. 6 (Problems of
    Strength in Machine Building No. 6) Moscow, 1960. 87 p.
    3,000 copies printed.

Resp. Ed.: F. M. Dimentberg, Doctor of Technical Sciences;
    Ed. of Publishing House: P. R. Zolotov; Tech. Ed.: I. F.
    Koval'skaya.

PURPOSE: This collection of articles is intended for engineers
    dealing with the problem of machine vibrations.

COVERAGE: The collection contains works which were originally
    presented at the Uchenyy sovet i Seminar prochnosti Instituta
    mashinovedeniya AN SSSR (Scientific Council and Seminar for
    Strength Research of the Institute of Science of Machines,
    Academy of Sciences   USSR), in 1958-59. The following prob-
    lems are investigated: vibrations in machines, balancing of
    flexible rotors (taking friction into account), the effect
    of impulses on flexible shaft connected to the engine, vibra-

Card 1/3

Problems of Strength (Cont.)   SOV/4415

tion of a shaft with clearance, determination of frequency and mode of free vibrations of variable cross-section bars by means of special functions, and the calculation of self-excited vibrations in a computer system. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

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Problems of Strength (Cont.)   SOV/4415

Sergeyev, V. I. Calculation of Self-Excited Vibrations in the
Presence of Clearance and Coulomb Damping in the System of the
Automated Drive of Bridge-Type Computers   55

Banakh, L. Ya., F. M. Dimentberg, and N. V. Zvinogrodskiy.
Vibrations of a Heavy Shaft With [Uniformly] Distributed Mass
and Clearance in One Bearing   68

AVAILABLE: Library of Congress

                                                  VK/dwm/ec
Card 3/3   12-19-60

VASIL'YEVA, R.V., inzh.; GUSAROV, A.A., kand.tekhn.nauk; DIMENTBERG,
F.M., doktor tekhn.nauk; TSEK'IANSKIY, K.R., inzh.

Experimental balancing of a flexible shaft in a model unit.
Vest.mash. 40 no.9:27-31 S '60.   (MIRA 13:9)
(Balancing of machinery)

EHRENBERG, F.L.; CHETAEV, N.T.; GUSEV, A.A.; CHITOMIRSKIY, V.K.,
    doktor tekhn. nauk, retsenzent; DANILOV, I.N., inzh., red.

[Vibrations of machinery] Kolebaniia mashin. Moskva, Mashino-
stroenie, 1964. 307 p.   (MIRA 17:8)

L 18451-66   EWT(m)/EWP(w)/ETC(m)-6   IJP(c)   WW/EM
ACC NR: AP6002561
                              SOURCE CODE: UR/0286/65/000/023/0057/0057

AUTHORS: Gusarov, A. A.; Gorshkova, I. N.; Mayorov, Ye. O.

ORG: none

TITLE: Device for signaling the unbalance of rotating bodies. Class 42, No.
176712 [announced by Scientific Research Institute of Chemical Machine Construc-
tion (Nauchno-issledovatel'skiy institut khimicheskogo mashinostroyeniya)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 57

TOPIC TAGS: turbine rotor, compressor rotor, laboratory instrument

ABSTRACT: This Author Certificate presents a device for signaling the unbalance
of rotating bodies, e.g., a rotor, which consists of a detector placed on the body,
power units connected to the detector, a control relay, and signal lamps. To
determine the direction of deflection of the rotor under the action of nonequilib-
rium centrifugal forces, the detector is in the form of an annular cavity partially
filled with a conducting liquid (see Fig. 1). A number of contacts are mounted

Card 1/2

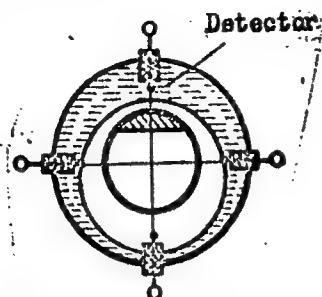   UDC: 62-251.783.2

L 18451-66
ACC NR: AP6002561

Detector

Fig. 1

O

radially in the cavity at an angle to each other. Orig. art. has: 1 diagram.

SUB CODE: 13/   SUBM DATE: 19Feb65

Card 2/2

SAKHIN, S. I., kand.tekhn.nauk; SHCHEGOLEVA, A.M., inzh.; GUSAROV, A.D.;
DUBINA, Ye.M.

Separate and simultaneous effect of molybdenum and tungsten on
the temper brittleness and hardenability of steel. Metallovedenie
2:104-122 '58.   (MIRA 13:9)
    (Steel alloys--Heat treatment) (Molybdenum) (Tungsten)

GUSAROV, A.D., kand.tekhn.nauk; KENDEL', M.D., inzh.

Using hydraulic machinery in working and transporting cohesive
soil of the overburden. Mekh. stroi. 17 no.12:3-5 D '60.
(MIRA 13:12)

(Hydraulic machinery)   (Earthwork)

GUSAROV, A.D., kand.tekhn.nauk; PETROV, Yu.M., inzh.

Study of the basic parameters of hydraulic conveying of chalk under winter conditions. Sbor. trud. NIIZHelezobetona no.3: 124-133 '60.

(MIRA 15:2)

(Chalk) (Hydraulic conveying)

GUSAROV, A.D., kand.tekhn.nauk; MEL'NIKOV, Yu.F., inzh.

The problem of hydraulic transportation of clay. Sbor. trud.
NIIZhelezobetona no.7:155-163 '62.   (MIRA 16:1)
         (Clay—Transportation) (Hydraulic conveying)

BERNSHTEYN, L.A.; GUSAROV, A.D.

Hydraulic conveying of slurry made of plastic cement raw material.
TSement 28 no.1:16-18 Ja-F '62.   (MIRA 16:5)
                          (Hydraulic conveying) (Cement)

GUSAROV, A.D., kand. tekhn. nauk

Hydraulic transportation of highly plastic soil from excavators.
Sbor. trud. NIIZHelezobetona no.8:90-94 '63   (MIRA 18:1)

L 65286-65   EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1)

ACCESSION NR: AP5019727

UR/0101/65/000/004/0007/0009
666.940:622.047.7

AUTHORS: Gusarov, A. D. (Candidate of technical sciences); Doshko, Yu. I. (Engineer); Kuchma, L. Kh. (Engineer)

TITLE: Determining the rheological characteristics of raw slurries and suspensions required for calculating hydrotransporting systems

SOURCE: Tsement, no. 4, 1965, 7-9

TOPIC TAGS: transport process, pipe flow, construction material / RV 8 rotational viscosimeter

ABSTRACT: The study of plastic and strength properties of raw slurries presents the possibility of controlling the measurement of their structural composition. A series of tests revealed that laminar flow is most economical for suspensions of high concentration flow characterized by low relative velocities. The use of the RV-8 rotational viscosimeter is discussed and evaluated in the light of tests involving cement products. It is stated that the accuracy of measurement with the RV-8 decreases with increasing concentration of suspensions. Data showing the effective viscosities of argillaceous and chalk suspensions of the Belgorod Cement Factory are shown for the purpose of comparing the RV-8 measurements with

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L 65286-65

ACCESSION NR: AP5019727

those obtained through the use of head loss curves in pipes of selected diameters.
The quantitative characteristics of the mechanical properties of suspensions were
determined according to the head loss relationship $I = f(V)$ with the use of both
commercial and laboratory pipes. The results of the tests are shown graphically.
The working equation of the curves is

$$P = f(V),$$

where $P = \Delta PR/2l$, and $V = 4Q/\pi R^3$. P is the tangential stress at the pipe
wall in dynes/cm^2; ΔP is the pressure drop; V is the velocity gradient at the
same points; R is the pipe radius (cm); and Q is the suspension flow volume
(cm^3/sec). The authors recommend that the data presented be applied to commer-
cial applications of transporting suspended solids. Orig. art. has: 2 tables
and 1 figure.

ASSOCIATION: Orgproyekttsement

SUBMITTED: 00   ENCL: 00   SUB CODE: MT, ME

NO REF SOV: 003   OTHER: 000

Card 2/2

GUSAROV, A.D., kand. tekhn. nauk; DUDKIN, A.... , inzh.: E... , L... , ...

Determining rheological characteristics of raw sludge and sus-
pensions indispensable in the calculation of hydraulic trans-
portation systems. TSement 31 no.4:7-9 Jl-Ag '65.
(MIRA 18:9)

1. Vsesoyuznoye gosudarstvennoye spetsial'noye byuro po
provedeniyu pusko-naladochnykh i proyektno-konstruktorskikh
rabot v tsementnoy promyshlennosti (for Gusarov).

GUSAROV, A. D.

GUSAROV, A. D. --"Effectiveness of Structural Drainages in Alluvial Structures."
*(Dissertations for Degrees in Science and Engineering Defended at USSR Higher
Educational Institutions) Min of Higher Education USSR, Moscow Peat Inst, Moscow, 1955

SO: Knizhnaya Letopis', No. 25, 18 Jun 55

* For Degree of Candidate in Technical Sciences

GUSAROV, A. F.

GUSAROV, A. F. and A. I. KUZNETSOV.

    Moskovskomu Aviatsionnomu Institutu im. Sergo Ordzhonikidze - 10 let.
(Tekhnika vozdushnogo flota, 1940, no. 9, p. 16-19)
    Title tr.: The Moscow Aeronautical Institute, named after Sergo
Ordzhonikidze, is ten years old.

<div align="center">TL504.T4 1940</div>

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
Congress, 1955.

AUTHORS: Gusarov, A. K., Pankrushin, V. K.   S/006/60/000/03/003/019
                                                        B007/B123
TITLE: On the Application of the Method of Measuring Angles in Sets

PERIODICAL: Geodeziya i kartografiya, 1960, Nr 3, pp 21 - 25 (USSR)

TEXT: The present paper refers to an article by B. M. Rubis published in the
periodical "Geodeziya i kartografiya", 1959, Nr 1. B. M. Rubis demands that the
application of the method of measuring angles in sets be prohibited for obser-
vations at triangulation points of the second order, and that it should be
restricted at points of the third order. Based on the experience gained in the
Novosibirskoye AGP (Novosibirsk Aerogeodetic Enterprise) it is shown that
B. M. Rubis is wrong. The observers N. F. Shishayev, Yu. A. Bykov, I. G. Dement'-
yev, and N. A. Dragovich are mentioned. For observations with changing sight
conditions in some directions the method suggested by N. V. Yakovlev (Ref 1,
footnote on p 23) is recommended. In order to confirm the arguments in favor of
this method Professors D. A. Kuleshov (Ref 2, footnote on p 24) and
K. L. Provorov and Docent A. A. Vizgin (Ref 2, footnote on p 24) are cited.
Based on the explanations made here the following is noted and suggested:
1) When observing points of continuous triangulation nets by means of the method
of measuring angles in sets the results obtained show the same accuracy as when
observing angles in all combinations. However, it saves time, and the successive

Card 1/2

On the Application of the Method of Measuring Angles   S/006/60/000/03/003/019
in Sets   B007/B123

adjustment is simpler when applying the former method. 2) Experience gained
from setting up continuous triangulation nets of the second and third order -
more than half the points of the second order and all points of the third order
being observed by the method of measuring angles in sets - showed that the ac-
curacy achieved met the demands of the mapping phase. 3) For setting up tri-
angulation nets the most economical methods must be used in order to prevent
superfluous work. On of the ways would be to apply to a large extent the method
of measuring angles in sets and the method of "incomplete observations" for ob-
servations at triangulation points of the second order. 4) The development of
new methods used to measure horizontal angles must be continued, the solution
being found in uniting the method in all combinations with the method of mea-
suring angles in sets. 5) The question of reducing the number of observations
to nine for observations of triangulation points of the third order should be
considered. There are 1 table and 3 Soviet references.

Card 2/2

KLYUCHEROV, A.P.; KONDRAT'YEV, S.N.; Prinimali uchastiye: GUSAROV, F.V.;
    UDOVENKO, V.G.; PETROV, G.A.; BURKSER, V.Ye.; SHMONIN, I.A.;
    KUDRIN, Ye.A.; GALAKHMATOV, S.N.; ZIMINA, L.P.; SHISHARIN, B.N.;
    KONDYURINA, R.V.; BURMISTROV, K.A.; SHIRNIN, I.A.; SIMONENKO, F.N.;
    GORSHILOV, Yu.V.; KOLPAKOV, B.V.; GUSAROV, A.K.; BOLOTOV, P.G.

Heat insulation of open-hearth furnace crowns. Metallurg 5 no.11:
14-17 N '60.   (MIRA 13:10)

1. Nizhe-Tagil'skiy metallurgicheskiy kombinat.
     (Open-hearth furnaces--Design and construction)
              (Insulation (Heat))

ZAKHAROV, A.F.; PETROV, G.A.; NOVIKOV, M.D.; POPOV, L.P.; TORSHILOV, Yu.V.;
GOLOKHMATOV, S.N.; GUSAROV, A.N.; KOVAL'CHUK, N.P.

Potentialities for increasing labor productivity in the
open-hearth process. Stal' 21 no.6:560-562 Je '61. (MIRA 14:5)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat.
   (Open-hearth furnaces—Equipment and supplies)

POSTNIKOV, G.A.; GUSAROV, A.S.

Automatic drop lip of aprons on horizontal copper converters.
TSvet.met. 33 no.1:85 Ja '60.   (MIRA 13:5)

1. Srednaural'skiy medeplavil'nyy zavod.
          (Converters)

BORISOV, Yu.A.; GUSAROV, A.V.; GOROKHOV, L.N.

Mass-spectrometric study of the evaporation of cesium superoxide.
Teplofiz. vys. temp. 2 no.3:487-489 My-Je '64.   (MIRA 17:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

ACCESSION NR: AP4044519   S/0294/64/002/004/0535/0539

AUTHORS: Gusarov, A. V.; Gorokhov, L. N.

TITLE: Determining mass-spectra of associates and their relative quantity in vapors of nonvolatile substances

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 4, 1964, 535-539

TOPIC TAGS: mass spectrum, vapor pressure, orifice outflow, monomer, cesium ion current/ MS 3 mass spectrometer

ABSTRACT: A uniform temperature method was used to determine the mass-spectra and composition of associate vapors as in the case of a monomer-dimer pair. Two types of effusive flow systems were used. The first consisted of two compartments stacked vertically and separated by a small orifice. The top chamber was filled with saturated vapor of a monomer-dimer pair with pressures p_m and p_d respectively. The bottom chamber contained an unsaturated vapor effusing through the orifice b between the two compartments. To determine the individual mass-spectra and the composition of the vapor, the initial ion current was measured in both chambers. To minimize stability problems in the above method, a second system was used where the two chambers were connected horizontally through an orifice and the ion cur-
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ACCESSION NR: AP4044519

rents were recorded simultaneously from two other orifices, one on each chamber. A MS-3 mass-spectrometer was used with special shutters to record consecutively the molecular beams from both orifices. An acceleration potential of 2.4 kilovolts and ionization potential of 75 volts were used with 1 ma current emission. The orifices were calibrated using cesium iodide vapor, with an efflux ratio S_a/S_c = 1.23 and the pressure ratio p_d/p_m determined subsequently. The mass-spectra of NaCl and CsJ vapors were recorded successfully using the above method. The relative intensities of Na^+, $NaCl^+$, Na_2Cl^+, Cs^+, J^+, CsJ^+, and Cs_2J^+ were determined in the experiment. Orig. art. has: 6 formulas, 3 figures, and 2 tables.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet (Moscow State University)

SUBMITTED: 12Feb64   ENCL: 00

SUB CODE: GC, OP   NO REF SOV: 006   OTHER: 002

Card 2/2

GUSAROV, A.V.; GOROKHOV, L.N.

Determining the mass spectra of associates and their relative
quantities in vapors over nonvolatile substances.   Teplofiz.
vys. temp. 2 no.4:535-539 Jl-Ag '64.   (MIRA 17:9)

1. Moskovskiy gosudarstvennyy universitet.

SHOSTAKOVSKIY, M.F.; ATAVIN, A.S.; TROFIMOV, B.A.; GUSAROV, A.V.; GLADKOVA, G.A.

Interaction of mercaptans with cyclic acetals. Izv.AN SSSR.Ser.khim. no.9:1686-1687 S '64.   (MIRA 17:10)

1. Irkutskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR.

SHOSTAKOVSKIY, ...; ....., ...; TROFIMOV, ...;

reaction of 2-methyl-1,3-dioxolane with hydrogen bromide, ...
AN SSSR. Ser. khim. no.6:1072-1074 '65.

(MIRA 18:9)

1. Irkutskiy institut organicheskoy khimii Sibirskogo otdeleniya
AN SSSR.

ACC NR: AT7011648   SOURCE CODE: UR/0000/66/000/000/0001/0007

AUTHOR: Yazdovskiy, V. I.; Tsitovich, S. I.; Agre, A. L.; Gusarov, B. G.;
Sinyak, Yu. Ye.; Chizhov, S. V.

ORG: none

TITLE: Transformation of wastes in a closed ecological system

TOPIC TAGS: life support system, metabolic waste, closed ecology system

ABSTRACT:
    Successful operation of life-support systems
based on partial recycling of substances depends on
mineralization of human wastes and other life-support
system byproducts, such as refuse from the space green-
house, garbage, etc. Biological, physical and chemical
methods of mineralization can be used alone or in com-
bination. Criteria for judging the efficiency of these
methods include the completeness of mineralization,
the degree of change in chemical composition and aggre-

Card 1/6

ACC NR: AT7011648

gate state of the products, the coefficient of return
of substances to the cycle, the weight and dimensions
of equipment, the expenditure of energy, and the toxi-
city of end products.

The high-temperature and catalytic oxidation methods
are most suitable for mineralizing solid and dehydrated
human waste and life-support system refuse. The high-temp-
erature method is technologically simple, but requires a
temperature of 700—800°C. However, it mineralizes near-
ly all wastes, producing ash and gaseous products (CO_2,
sulfur oxides, etc.). Within a range of combustion
regimes the mineral composition of the ash is fairly
constant, although its physical and chemical properties
may change. One disadvantage of the high-temperature
method is the possibility of forming free nitrogen,
which must be bound (with additional energy expenditure).
It should be noted that some type of high-temperature
mineralization must be included in a life-support sys-
tem because this step burns up the end-products of

other forms of processing. This method can be success-
fully used in partially closed systems.

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ACC NR: AT7011648

The catalytic oxidation method of mineralization requires comparatively little energy and produces an acid solution useful for dissolving ash and treating nutrient media for autotrophs. Lower initial temperatures (200°C are required, and the ash formed by this mineralization process is more suitable for further processing. However, experimental conditions must be strictly controlled and long-acting, stable catalysts must be found. The catalytic oxidation method can be advantageously combined with the high-temperature method previously described. This combination can be used in partially closed systems, when the desired end-product is solutions of mineral salts.

The "pressure-cooking" method (oxidation of wastes in the liquid state) utilizes high pressure and high temperature and can be used to mineralize liquid human wastes, diluted urine-fecal mixtures and plant residue. This complicated method deserves more study because it produces a solution of mineral salts directly. Owing to the variety of organic substances subjected to mineralization, it is difficult to obtain a solution of constant composition. Experimental investigation of this self-sustaining exothermal process showed 90% minerali-

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ACC NR: AT7011648

zation of urine-fecal and fecal mixtures. Unfortunately,
the remaining unidentified organic substances are very
toxic for plants and must undergo additional processing.
Traces of hydrogen, saturated and unsaturated hydrocar-
bons, and ammonia are found in the vapor after minerali-
zation. Furthermore, the high pressure (150 atm) and
temperature (250—275°C) required make this method
technologically difficult. A possible use for this method
is high-temperature hydrolysis of urea, producing ammonia
and nitric acid. More research is required to determine
the place of the "pressure cooking" method in a complex
life-support system.

An aerobic method was selected to demonstrate
biological mineralization. Biological mineralization
can be intensified by (1) increasing the total num-
ber of microbes by regenerating the activated sludge,
(2) increasing oxygen utilization by prolonging con-
tact of the mixture with air (without increasing the
length of aeration), or (3) by using higher tempera-
tures during cultivation of activated sludge. Long-
term experiments were conducted with a concentrated
(1:30) urine-fecal solution aerated for 4 hr, with the

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ACC NR: AT7011648

following results: 85% mineralization of organic sub-
stances and 95% conversion of nitrogen-containing sub-
stances into nitrates.

Gaseous products of waste mineralization must be
converted into solid or liquid form for use as plant
nutrients. With the catalytic method of mineralizing
gaseous substances, oxides of nitrogen and sulphur,
CO_2, and water are obtained. Mineralization of a daily
amount of solid and liquid human wastes produces as much
as 3.0—4.0 g of free nitrogen, 0.5 g of hydrogen, 3.0
g of carbon monoxide, 7.0 g of ammonia, and as much as
5.0 g of saturated and unsaturated hydrocarbons. During
this process, as much as 122 g of CO_2 can be formed and
60 g of oxygen expended. The end product, after minerali-
zation and purification, must contain only nitrogen,
oxygen, and CO_2.

Mineralization of human and plant wastes is closely
connected with the regeneration, conditioning, and stor-
age of water. Water sources are water-containing pro-
ducts of human metabolism and life-support system opera-
tion, a condensate of atmospheric moisture, and water of
transpiration. A water-regeneration system weighs 20—

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ACC NR: AT7011648

50 kg regardless of flight duration, while a water supply
for three men on a 30-day spaceflight can weigh 495 kg.
One man requires approximately 4 liters of water per day,
of which 1200 ml is drinking water, 1000 ml is needed
for food preparation (more for dehydrated food), and 1800
ml for hygienic needs. Sufficient water for these pur-
poses can be supplied by atmospheric moisture, urine,
water left from washing, water of transpiration from
higher plants, and algal substrate. The most promising
methods for regeneration of water from human metabolic
wastes are catalytic oxidation, vacuum distillation, and
lyophilization. Lyophilization or molecular drying uti-
lizes the vacuum and low temperatures of space. Studies
have shown that water can be purified with sorbents (in-
cluding ion-exchangers) if organic substances are oxidized
first and semipermeable membranes are used. A number of
other methods can be used for regeneration of water—
electrochemical methods, ultrasound, radiation, and ozo-
nation. Hygienic and chemical properties of water re-
generated by lyophilization, vacuum distillation and cata-
lytic oxidation are listed. These data show the need
for additional purification by sorbents in some cases.
Orig. art. has: 1 table. [ATD PRESS: 5098-F]
SUB CODE: 06 / SUBM DATE: none

Card 6/6

AUTHORS: Patrikeyev, G. A.,   Gusarov, B. G.,   Konoplev, V. I.

TITLE: Brittle Rupture of Polymers in High-elastic State

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 9,
                pp. 1438-1439

TEXT: Polymeric material weakened by incisions is bound to undergo a
brittle rupture at the incised spot at low temperatures and a certain
critical elongation rate. The authors checked this assumption by a
dynamometer and an МПО-2 (MPO-2) loop oscilloscope which allowed for
elongation rates to be measured up to 2 m·sec^{-1}. In natural rubber, the
tearing strength was found to be considerably reduced at an elongation
rate of over 0.7 m·sec^{-1} and temperatures of $-20 \pm 5^{\circ}$C. At this rate,
a brittle rupture occurred at -60°C. Figs. 1 and 2 show the experimental
data. The authors recommend the application of tearing strength tests
at high elongation rates. The need is felt of an improvement in inertialess
dynamometers. There are 2 figures and 2 Soviet references.

SUBMITTED: June 11, 1960
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ACCESSION NR: AT4037681   S/2865/64/003/000/0089/0103

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TITLE: The recycling problem under prolonged spaceflight conditions

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy* kosmicheskoy biologii,
v. 3, 1964, 89-103

TOPIC TAGS: manned space flight, life support, closed ecological system, waste
recycling, respiration, toxicology, algae, nutrition, photosynthesis

ABSTRACT: Biological recycling of wastes on spaceships can utilize both aerobic
and anaerobic methods. Apparently liquid wastes can be processed by means of
aerobic oxidation, while solid wastes require anaerobic methods. The advantages
of the aerobic method are: the high speed of processing in an aerotank, oxidation
of organic substances down to CO_2, and the ability to control the speed of the
process by means of regulating the rate of oxygen flow. The disadvantage of this
method is the large amount of oxygen required. The advantages of the anaerobic
method consist of the absence of large air requirements and a small energy require-
ment. The disadvantages of this latter process are the slow rate of processing

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and the production of a large amount of harmful gases, particularly methane, making the mixture explosive. Another method which can be utilized in a closed ecological system is a biological method of processing wastes with participation of photosyn- thesis of algae. The advantage of this method is that it takes place in the light, and the oxygen required for bacterial oxidation of organic substances is obtained from the photosynthetic activity. Bacterial mineralization of organic substances is accompanied by photosynthetic building up of cell bodies of the algae. Conse- quently, this process involves the utilization of substances contained in human and animal wastes for obtaining algae which can, in turn, serve as a source of food for man and animals. The following are the chief disadvantages of the above indi- cated biological methods: small probability of complete recycling of wastes; the difficulty in obtaining products which are qualitatively and quantitatively con- stant; the uncertainty of adaptation on the part of microorganisms to unknown space-flight conditions (the possibility of mutations, etc.); the difficulty in controlling the rate of the processes; and the possibility of the appearance and accumulation of toxic by-products. Physicochemical methods of waste recycling can also be used. By means of these methods, it is possible to separate the soluble from the insoluble parts, extract useful substances from solvents, provide for combustion of insoluble substances to obtain gases and solids, and synthesize the gases and solids into required substances. Recycling of wastes based on

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physicochemical methods can include the following: extraction of substances from wastes which can be used directly, mineralization of organic substances, obtainment of products of definite chemical composition from ash and gases, and synthesis of nourishing solutions. The recycling of carbon and nitrogen in a closed ecological cycle can be performed by physicochemical processes. CO_2 gas exhaled by man can be used directly by plants. Soluble carbon compounds can also be utilized by plants for nourishment. Insoluble carbon compounds can be transformed into CO_2 by means of heat treatment. The CO_2 thus obtained can either be stored for supply purposes or can go directly to the greenhouse. Nitrogen products found in wastes can be extracted and used for feeding plants and possibly even animals. The remaining nitrogen compounds can be used for mineralization, which can be accomplished by various physicochemical means. An outline of such a scheme utilizing physicochemical processes can include the following: a unit for the collection of wastes, from which the products proceed to a second unit where those that can be utilized by man or other living organisms are extracted directly. The remaining substances proceed to a mineralization unit. While the gases produced during the mineralization process are trapped and separated, the insoluble inorganic salts are transformed into soluble ones in the next unit. Part of them go to living organisms while the remainder go to a unit for obtaining inorganic compounds. The by-products thus obtained are then converted into nourishing mixtures.

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At the present time it is difficult without experimental data to make a precise
evaluation of this type of cycle, but it is possible to estimate the weight of
such a cycle as 400 to 500 kg for a crew of five. Even if this weight were to be
doubled, it would still be considerably less than the required weight of mineral
salts for green houses in a life-support system based on stored supplies. A good
recycling system should have the following characteristics: a minimum system of
units necessary for processing wastes, use of common processes for transformation
of elements contained in wastes into definite compounds, a maximum rate of proces-
sing these products, the inclusion of only those substances which are involved in
the recycling. In addition to the above, it should have the following character-
istics: minimum weight and size, minimum energy requirements, simple reliable
construction, use of stable and highly resistant materials, means of preventing
toxic substances from seeping out into the space cabin, and absence of processes
not required for recycling. A comparison of biological methods, on the one hand,
and physicochemical methods, on the other, shows that the latter have a number of
advantages, including the possibility of complete recycling of wastes, short dura-
tion of the recycling process, the possibility of obtaining separate substances
and required nourishing solutions of predetermined composition, and the use of
processes which are widely used in chemical engineering. The disadvantages include
high energy utilization and complexity of equipment. However, these are offset, to

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a certain extent, by the use of solar energy and the latest materials and methods
of physicochemical processing. It should be noted that each mission requires the
recycling of only those products required by that mission. This means that, in
some cases, life-support systems will require only the regeneration of water. The
fact that physicochemical processing has been very well studied in comparison to
biological processing makes it probable that physicochemical recycling will be
used in the first experimental closed ecological systems. However, it should be
borne in mind that the optimum system of utilization will be based on the use of
biological as well as physicochemical processes.

ASSOCIATION: none

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SUB CODE: PH, LS   NO REF SOV: 022

ENCL: 00

OTHER: 008

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(MIRA 13:8.)
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21, 8100 (1033,1138,1570)

AUTHORS: Gusarov, I. I., Lyapidevskiy, V. K.

TITLE: Determination of Inhaled Doses of Radon Decay Products

PERIODICAL: Atomnaya energiya, 1960, Vol. 10, No. 1, pp. 64-67

TEXT: A new method is suggested for determining the inhalation of radon decay products. The method is based on the counting of alpha particles per liter of air, which are produced by a complete decay of radon daughter products. In view of its relative exiguity, beta activity is neglected. The amount of energy released by a complete decay of the α-active atoms contained in 1 liter of air is given as $E_1 = a(ERaA - ERaC') + (b+c)ERaC'$.

where a, b, and c are the numbers of RaA, RaB, and RaC atoms, respectively, per 1 l of air; ERaA and ERaC are the energies released per decay of the respective element. Denoting their mean value by E_α, one obtains: E_2 = $E_\alpha(2a+b+c) = E_\alpha n$, where n is the number of alphas produced per l of air. The error due to averaging is insignificant. If it is further assumed

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Determination of Inhaled Doses of Radon   S/089/60/010/001/009/020
Decay Products   B006/B063

that the absorption coefficient η is equal for all inhaled radon decay products, $E = \eta nE$ will hold. In addition to the commonly accepted filter method, there are some other methods available for the determination of the unknown n: Supposing that for a certain pumping rate v, the number n_p of alphas recorded per unit time remains constant within a long time interval, the number of radioactive atoms will remain constant within the time Δt of this interval, that is to say, the number of radioactive atoms retained by the filter during the time Δt is equal to the number of atoms decaying in the same time. In the time Δt, exactly 1 l of air is to be pumped through the filter. For RaA, RaB, and RaC, the number of atoms retained by the filter is $\varphi_1(a+b+c)$, where φ_1 is the known filtration efficiency. The total number of decay events is $\varphi_1(2a+b+c) = \varphi_1 n$ and, thus, n is equal to $n_p/v\varphi_1\varphi_2$, where φ_2 is the recording efficiency; the counting rate n_p is expressed in pulses/min; v is given in 1/min. A device with continuous recording of the alphas emitted by the filter was developed by the authors jointly with A. M. Konstantinov for dose measurement by this

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Determination of Inhaled Doses of Radon
Decay Products

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method. This device was used for two series of experiments, the first of
which corresponded to a short-period exposure of the organism to a
contaminated atmosphere, whereas the second series corresponded to a
longer exposure, in which radioactive substances are concentrated in the
organism. This concentration differs from the concentration of these
substances in the atmosphere. On account of the fluctuations in time of the
quantities of substances contained in the air, simultaneous measurements
were made with two devices of the same type. The number of α-particles
recorded in a complete decay of the daughter products proved to be largely
independent of the method applied and of the concentration ratio of
daughter products. The radon concentration may be determined from the
number of recorded alphas. Fig. 2 shows accumulation and decay curves of
daughter products retained by filter 1 and filter 2 (for $v = 15 l/min$,
$A = 11$). The authors thank A. V. Bykhovskiy, M. S. Kozodayev, and Ye. V.
Shchepot'yeva for discussions, and A. A. Titov for assistance in measure-
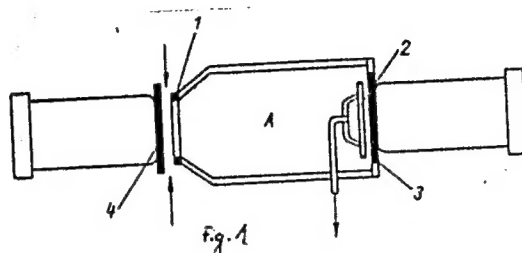ments. There are 2 figures and 3 references: 2 Soviet and 1 US.

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Legend to Fig. 1: 1), and 2) filters; 3), 4) scintillation counters; the
arrows indicate the direction of air movement

Legend to Fig. 2: n_p - counting rate, t - pumping time

Fig. 1

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GUSAROV, I.I.

Study of the natural radioactivity of the air. Gig.i san 25
no.2:86-88 F '60.   (MIRA 13:6)

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          (RADIOACTIVITY)